

**DOUBLE-FLOWERED CEANOOTHUS.**—A double-flowered Rhamnads has, so far as I know, not hitherto been recorded ; at least, no such case is mentioned in Dr. Dammer's recent German translation of my Vegetable Teratology, in which numerous additions have been made, both by the translator and myself, to the records given in the original edition. It may, therefore, be worth mentioning that among some garden varieties of *Ceanothus* that have lately come under my observation, there were several 'double' forms. The mode of doubling in each case was similar. Each flower had a calyx of five sepals as usual, then five petals of the ordinary, long-stalked, spoon-shape. In front of each of these was a similar petal representing the stamen of an ordinary flower. Both sets of petals sprang from the outside of a thickened annular disc lining the base of the calyx. Within the disc there was no pistil, but in its place a tufted mass of imbricating, petaline scales arranged around a slightly prolonged axis.

The arrangement of the outer parts of the flower may be understood by the following formula :—

S	S	S	S	S
P	P	P	P	P
P	P	P	P	P

The inner row of petals thus exactly corresponds in position with the stamens of an ordinary flower. Eichler attributes the superposition of the stamens to the petals in Rhamnads to the suppression of an outer row of stamens, but in no genus of *Rhamnaceae* is any second row of stamens mentioned. An examination of the flowers in question leads me to suggest that the petals and stamens are not in this case autonomous organs, but that the one is an outgrowth from the other. This can only be determined by a more complete investigation of the course of development and the study of the anatomy and distribution of the vessels than I have been able to make. In any case, the 'doubling' of the *Ceanothus* flower is brought about by the petalisation of the stamens, the suppression or non-development of the pistil, and by the median-proliferation of the flower. Whether mites had anything to do with the production of these double flowers I am unable to say, my testimony is simply to the effect that I did not find any. Indeed, Peyritsch's experiments need to be confirmed by other observers before they can be considered as conclusively proving the agency of mites in

the formation of double flowers. I am familiar with certain changes which appear to be the result of the action of mites (*Phytopti*), such as a preternatural development of scales, but I have not been led at present to co-relate the injuries inflicted by mites with the development either of *Peloria* or of double flowers.

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**ON DR. MACFARLANE'S OBSERVATIONS ON PITCH-ERED INSECTIVOROUS PLANTS.**—While recognising with much satisfaction that Dr. Macfarlane's examination of the pitcher of *Nepenthes* has led him to conclusions which are in part similar to my own<sup>1</sup>, I think it is nevertheless necessary, to point out that our views are by no means coincident, and the difference depends upon a certain fundamental factor in morphological method.

The chief point on which we agree is that the lid of the pitcher of *Nepenthes* is the result of congenital coalescence of two pinnae; but I regard these as the only pinnae formed by the winged phyllopodium, while Dr. Macfarlane says, 'We may fairly view a *Nepenthes* leaf as being compound, and composed of from three to four or five pairs of leaflets disposed along a midrib, and that both leaflets and midrib undergo striking modifications, the leaflets especially showing a marked tendency to dorsal fusion above.' Dr. Macfarlane further constructs a diagram (Fig. 7), and explains (p. 259) that he regards the lid as the result of coalescence of the *third* pair of pinnae, the two lower pairs being represented by the regions marked (*b*) and (*c*) in his diagram. In my view, however, the lateral flaps which he regards as pinnae are merely developments of those wings, which are to be seen here, as in so many leaves from the Ferns upwards, traversing the whole length of the phyllopodium longitudinally, and I base this view upon the fact that these wings are visible as smooth flanges in very early stages of development, there being (with the exception of the young lid) no rounded and projecting outgrowths upon them which could be recognised as pinnae. The study of the external form and internal structure of the mature leaf cannot suffice to substantiate such a view as that of Dr. Macfarlane. In order to support his view it will be incumbent upon him to show that distinct rounded outgrowths do appear on the wings of the young leaf; but he does not give any such evidence, nor do my own observations or those of Sir J. Hooker

<sup>1</sup> *Annals of Botany*, vol. iii, p. 239, and p. 253.